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FILE COVERS 1907 - 30 Jul 2009 VOL 151 ISS 5
FILE LAST UPDATED: 29 Jul 2009 (20090729/ED)
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Jun 2009
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Jun 2009
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HCAplus now includes complete International Patent Classification (IPC) reclassification data for the second quarter of 2009.

CAS Information Use Policies apply and are available at:

<http://www.cas.org/legal/infopolicy.html>

This file contains CAS Registry Numbers for easy and accurate substance identification.

The ALL, BIB, MAX, and STD display formats in the CA/CAPplus family of databases have been updated to include new citing references information. This enhancement may impact record import into database management software. For additional information, refer to NEWS 22.

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=> d 197 bib abs hitind hitstr retable tot
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L97 ANSWER 1 OF 7 HCAPLUS COPYRIGHT 2009 ACS on STN
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AN 2007:1240594 HCAPLUS Full-text
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DN 147:472258
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TI Nonaqueous electrolyte secondary batteries suppressing gas evolution on high-temperature storage
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IN Ukawa, Shinsaku; Ichihashi, Akira; Honda, Kazuyoshi
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PA Sony Corp., Japan
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SO Jpn. Kokai Tokkyo Koho, 16pp.
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CODEN: JKXXAF
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DT Patent
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LA Japanese
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FAN.CNT 1
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	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	-----
PI	JP 2007287434	A	20071101	JP 2006-112294	20060414 <--
PRAI	JP 2006-112294		20060414		

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AB The batteries hold gel electrolytes containing nonionic aromatic compds. (e.g., tert-butylbenzene, 1-methylpropylbenzene) and satisfy closed-circuit
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voltage 4.25-6.00 V in full-charged state. The batteries exhibit less voltage drop and suppress decomposition of electrolytic solns.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Secondary batteries

(lithium; nonaq. electrolyte secondary batteries suppressing gas evolution on high-temperature storage)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate

RL: TEM (Technical or engineered material use); USES (Uses)

(battery electrolyte solns.; nonaq. electrolyte secondary batteries suppressing gas evolution on high-temperature storage)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer

RL: TEM (Technical or engineered material use); USES (Uses)

(battery electrolyte; nonaq. electrolyte secondary batteries suppressing gas evolution on high-temperature storage)

IT 21324-40-3, Lithium hexafluorophosphate

RL: TEM (Technical or engineered material use); USES (Uses)

(battery electrolytes; nonaq. electrolyte secondary batteries suppressing gas evolution on high-temperature storage)

IT 98-06-6, tert-Butylbenzene 135-98-8,

1-Methylpropylbenzene 700-88-9, Cyclopentylbenzene 3319-31-1,

Tri-2-ethylhexyl trimellitate

RL: MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolyte secondary batteries suppressing gas evolution on high-temperature storage)

IT 98-06-6, tert-Butylbenzene 135-98-8,

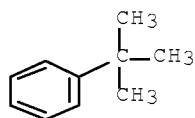
1-Methylpropylbenzene

RL: MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolyte secondary batteries suppressing gas evolution on high-temperature storage)

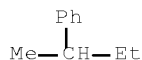
RN 98-06-6 HCAPLUS

CN Benzene, (1,1-dimethylethyl)- (CA INDEX NAME)



RN 135-98-8 HCAPLUS

CN Benzene, (1-methylpropyl)- (CA INDEX NAME)



L97 ANSWER 2 OF 7 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2006:489437 HCAPLUS Full-text

DN 144:491872

TI Preparation of ion-dissociating fullerene derivatives useful for proton conductors of fuel cells

IN Hikuma, Koichiro; Li, Yong-Ming; Fukushima, Kazuaki; Noda, Kazuhiro; Sunagawa, Kazuhiko; Nakano, Shinichi

PA Sony Corp., Japan; Kureha Chemical Industry Co., Ltd.

SO Jpn. Kokai Tokkyo Koho, 20 pp.

CODEN: JKXXAF

DT Patent  
 LA Japanese  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2006131517	A	20060525	JP 2004-320072	20041104 <--
FRAI	JP 2004-320072		20041104		
OS	CASREACT 144:491872				
AB	Fullerene mols. [e.g., Cf (f = 36, 60, 70, 76, 78, 80, 82, 84, etc.)] are reacted with mols. having fluorinated spacer groups which connect halogen atoms and ion-dissociating group precursors in solvents having $\geq 150^\circ$ b.p. and/or under normal pressure to have the ion-dissociating groups through the spacer groups. The process does not require high-pressure vessels and the resulting proton conductors show high proton conductivity				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 49, 76				
IT	Glass, uses RL: TEM (Technical or engineered material use); USES (Uses) (linings, of reaction vessels; preparation of proton-conductive fullerenes connecting sulfonyls through fluoroalkoxyalkyl spacers for fuel cell electrolytes)				
IT	Fuel cell electrolytes Substitution reaction (preparation of proton-conductive fullerenes connecting sulfonyls through fluoroalkoxyalkyl spacers for fuel cell electrolytes)				
IT	Ionic conductors (proton conductors; preparation of proton-conductive fullerenes connecting sulfonyls through fluoroalkoxyalkyl spacers for fuel cell electrolytes)				
IT	Laboratory ware (reaction vessels, glass-lined metal vessels; preparation of proton-conductive fullerenes connecting sulfonyls through fluoroalkoxyalkyl spacers for fuel cell electrolytes)				
IT	Metals, uses RL: TEM (Technical or engineered material use); USES (Uses) (reaction vessels; preparation of proton-conductive fullerenes connecting sulfonyls through fluoroalkoxyalkyl spacers for fuel cell electrolytes)				
IT	Fullerenes RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (sulfofluoroalkoxyalkyl-introduced, proton conductors; preparation of proton-conductive fullerenes connecting sulfonyls through fluoroalkoxyalkyl spacers for fuel cell electrolytes)				
IT	66137-74-4DP, 2-(2-Iodo-1,1,2,2-tetrafluoroethoxy)-1,1,2,2-tetrafluoroethanesulfonyl fluoride, reaction products with C60 fullerene, hydrolyzed 99685-96-8DP, Fullerene C60, reaction products with iodofluoroethoxyfluoroethanesulfonyl fluoride, hydrolyzed 115383-22-7DP, C70 Fullerene, sulfofluoroalkoxyalkyl-introduced RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (preparation of proton-conductive fullerenes connecting sulfonyls through fluoroalkoxyalkyl spacers for fuel cell electrolytes)				
IT	66137-74-4, 2-(2-Iodo-1,1,2,2-tetrafluoroethoxy)-1,1,2,2-tetrafluoroethanesulfonyl fluoride				

RL: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation of proton-conductive fullerenes connecting sulfonyls through fluoroalkoxyalkyl spacers for fuel cell electrolytes)

IT 90-13-1, 1-Chloronaphthalene 95-50-1, o-Dichlorobenzene  
 98-06-6, tert-Butylbenzene 98-82-8, Isopropylbenzene  
 103-65-1, n-Propylbenzene 104-51-8, Butylbenzene 108-36-1,  
 m-Dibromobenzene 120-82-1, 1,2,4-Trichlorobenzene 135-98-8,  
 sec-Butylbenzene 541-73-1, m-Dichlorobenzene 583-53-9,  
 o-Dibromobenzene 605-02-7, 1-Phenylnaphthalene 12002-48-1,  
 Trichlorobenzene

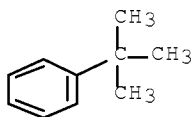
RL: NUU (Other use, unclassified); USES (Uses)  
 (reaction solvents; preparation of proton-conductive fullerenes connecting sulfonyls through fluoroalkoxyalkyl spacers for fuel cell electrolytes)

IT 98-06-6, tert-Butylbenzene 98-82-8, Isopropylbenzene  
 135-98-8, sec-Butylbenzene

RL: NUU (Other use, unclassified); USES (Uses)  
 (reaction solvents; preparation of proton-conductive fullerenes connecting sulfonyls through fluoroalkoxyalkyl spacers for fuel cell electrolytes)

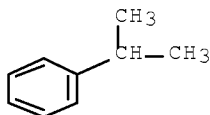
RN 98-06-6 HCAPLUS

CN Benzene, (1,1-dimethylethyl)- (CA INDEX NAME)



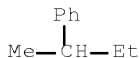
RN 98-82-8 HCAPLUS

CN Benzene, (1-methylethyl)- (CA INDEX NAME)



RN 135-98-8 HCAPLUS

CN Benzene, (1-methylpropyl)- (CA INDEX NAME)



L97 ANSWER 3 OF 7 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2005:1049966 HCAPLUS Full-text

DN 143:349948

TI Nonaqueous electrolyte solution for secondary lithium secondary battery

IN Abe, Koji; Ushigoe, Yoshihiro; Ito, Akikazu

PA Ube Industries, Ltd., Japan  
 SO PCT Int. Appl., 27 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005091423	A1	20050929	WO 2005-JP5022	20050318 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	CA 2560380	A1	20050929	CA 2005-2560380	20050318 <--
	CN 1954456	A	20070425	CN 2005-80015478	20050318 <--
	US 20080248399	A1	20081009	US 2006-593231	20060918 <--
	KR 2006130258	A	20061218	KR 2006-721619	20061018 <--
	IN 2006CN03858	A	20070615	IN 2006-CN3858	20061018 <--
PRAI	JP 2004-79693	A	20040319	<--	
	WO 2005-JP5022	W	20050318	<--	

AB The electrolyte solution has an electrolyte dissolved in a nonaq. solvent and contains 0.1-10 % tert-alkyl benzene compound and 0.001-0.5% benzene compound, having C1-4 hydrocarbon group bonded to a benzene ring via the tertiary C atom, relative to the tert-alkyl benzene compound

IC ICM H01M0010-40

ICS C07C0007-148; C07C0015-02

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Battery electrolytes

(electrolyte solns. containing tert-alkyl benzene compds. and benzene compds. for secondary lithium secondary batteries)

IT 96-49-1, Ethylene carbonate 623-53-0, Methyl ethyl carbonate 12190-79-3, Cobalt lithium oxide (CoLiO2) 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 346417-97-8, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2)

RL: DEV (Device component use); USES (Uses)

(electrolyte solns. containing tert-alkyl benzene compds. and benzene compds. for secondary lithium secondary batteries)

IT 98-06-6, tert-Butylbenzene 98-82-8, Isopropylbenzene 135-98-8, sec-Butylbenzene 872-36-6, Vinylene carbonate 1014-60-4, 1,3-Di-tert-butylbenzene 1559-81-5 2049-95-8, tert-Pentylbenzene 4481-30-5,

(1,2-Dimethylpropyl)benzene 53563-67-0, Dimethylindan

RL: MOA (Modifier or additive use); USES (Uses)

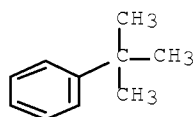
(electrolyte solns. containing tert-alkyl benzene compds. and benzene compds. for secondary lithium secondary batteries)

IT 98-06-6, tert-Butylbenzene 98-82-8, Isopropylbenzene 135-98-8, sec-Butylbenzene 1014-60-4, 1,3-Di-tert-butylbenzene 1559-81-5 2049-95-8, tert-Pentylbenzene 4481-30-5, (1,2-Dimethylpropyl)benzene 53563-67-0, Dimethylindan

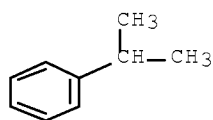
RL: MOA (Modifier or additive use); USES (Uses)

(electrolyte solns. containing tert-alkyl benzene compds. and benzene compds. for secondary lithium secondary batteries)

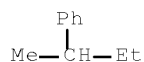
RN 98-06-6 HCAPLUS  
 CN Benzene, (1,1-dimethylethyl)- (CA INDEX NAME)



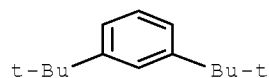
RN 98-82-8 HCAPLUS  
 CN Benzene, (1-methylethyl)- (CA INDEX NAME)



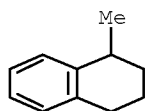
RN 135-98-8 HCAPLUS  
 CN Benzene, (1-methylpropyl)- (CA INDEX NAME)



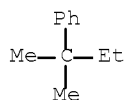
RN 1014-60-4 HCAPLUS  
 CN Benzene, 1,3-bis(1,1-dimethylethyl)- (CA INDEX NAME)



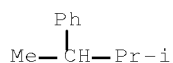
RN 1559-81-5 HCAPLUS  
 CN Naphthalene, 1,2,3,4-tetrahydro-1-methyl- (CA INDEX NAME)



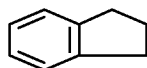
RN 2049-95-8 HCAPLUS  
 CN Benzene, (1,1-dimethylpropyl)- (CA INDEX NAME)



RN 4481-30-5 HCAPLUS  
 CN Benzene, (1,2-dimethylpropyl)- (CA INDEX NAME)



RN 53563-67-0 HCAPLUS  
 CN 1H-Indene, 2,3-dihydrodimethyl- (CA INDEX NAME)



2 ( D1-Me )

# RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Ube Industries Ltd	2002			WO 200259999 A1	
Ube Industries Ltd	2004			JP 200463367 A	

L97 ANSWER 4 OF 7 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2005:823988 HCAPLUS Full-text

DN 143:232676

TI Nonaqueous electrolyte for lithium secondary battery

IN Ahn, Soon-Ho; Lee, Jae-Hyun; Cho, Jeong-Ju; Lee, Ho-Chun; Son, Mi-Young;  
 Kim, Hyeong-Jin; Lee, Han-Ho

PA LG Chem, Ltd., S. Korea

SO PCT Int. Appl., 33 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005076403	A1	20050818	WO 2004-KR257	20040210 <--
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE,				

ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK,  
 TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG  
 EP 1728291 A1 20061206 EP 2004-709768 20040210 <--  
 R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,  
 IT, LI, LU, MC, NL, PT, RO, SE, SI, SK, TR

CN 1914761 A 20070214 CN 2004-80041548 20040210 <--  
 JP 2007522632 T 20070809 JP 2006-553038 20040210 <--  
 TW 250678 B 20060301 TW 2004-93106934 20040316 <--  
 US 20070141475 A1 20070621 US 2006-588481 20060801 <--

PRAI WO 2004-KR257 W 20040210

AB The invention relates to a nonaq. electrolyte solution containing new additives and a lithium secondary battery including the same. More particularly, the invention relates to a nonaq. electrolyte solution containing a lithium salt, an electrolyte compound, a first additive compound with an oxidation initiation potential of more than 4.2 V, and a second additive compound with an oxidation initiation potential of more than 4.2 V, which is higher in oxidation initiation potential than the first additive, and deposits oxidative products or form a polymer film, in oxidation, as well as a lithium secondary battery including the same. The present invention can provide a lithium secondary battery excellent in both the battery performance and the battery safety in overcharge by the combined use of the first additive and the second battery as additives to the nonaq. electrolyte solution

IC ICM H01M0010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Secondary batteries

(lithium; nonaq. electrolyte for lithium secondary battery)

IT Battery electrolytes

(nonaq. electrolyte for lithium secondary battery)

IT Aromatic compounds

RL: MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolyte for lithium secondary battery)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7,  
 Propylene carbonate 21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

(nonaq. electrolyte for lithium secondary battery)

IT 71-43-2, Benzene, uses 92-52-4, Biphenyl, uses 96-09-3, Phenylloxirane

96-43-5, 2-Chlorothiophene 98-06-6, tert-Butylbenzene

98-82-8, Isopropylbenzene 99-62-7, 1,3-Diisopropylbenzene

100-18-5, 1,4-Diisopropylbenzene 100-41-4, Ethylbenzene, uses

100-42-5, Vinylbenzene, uses 100-47-0, Benzonitrile, uses 100-84-5,

3-Methylanisole 101-84-8, Diphenyl ether 103-63-9 104-85-8,

4-Methylbenzonitrile 104-93-8, 4-Methylanisole 106-42-3,

1,4-Dimethylbenzene, uses 108-48-5, 2,6-Dimethylpyridine 108-67-8,

Mesitylene, uses 108-88-3, Toluene, uses 110-00-9, Furan 110-02-1,

Thiophene 132-64-9, Dibenzofuran 139-66-2, Phenyl sulfide 140-39-6,

p-Methylphenyl acetate 321-60-8, 2-Fluoro-1,1'-biphenyl 352-32-9,

p-Fluorotoluene 352-70-5, m-Fluorotoluene 452-10-8,

2,4-Difluoroanisole 462-06-6, Fluorobenzene 609-40-5, 2-Nitrothiophene

616-44-4, 3-Methylthiophene 617-90-3, 2-Cyanofuran 827-52-1,

Cyclohexylbenzene 873-49-4, Cyclopropylbenzene 1012-72-2,

1,4-Di-tert-butylbenzene 1016-09-7, Diphenylmethyl methyl ether

1585-07-5, 1-Bromo-4-ethylbenzene 2745-25-7, 2-Furanacetoneitrile

20282-30-8 30078-65-0, 3-Cyanofuran

RL: MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolyte for lithium secondary battery)

IT 98-06-6, tert-Butylbenzene 98-82-8, Isopropylbenzene

1012-72-2, 1,4-Di-tert-butylbenzene

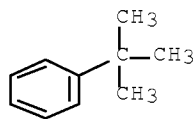
RL: MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolyte for lithium secondary battery)

RN 98-06-6 HCAPLUS

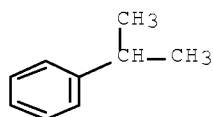


CN Benzene, (1,1-dimethylethyl)- (CA INDEX NAME)



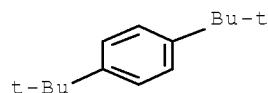
RN 98-82-8 HCAPLUS

CN Benzene, (1-methylethyl)- (CA INDEX NAME)



RN 1012-72-2 HCAPLUS

CN Benzene, 1,4-bis(1,1-dimethylethyl)- (CA INDEX NAME)



# RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Kabushiki Kaisha Toyota	2002			US 200218926 A1	
Nec Molienerg Canada Lt	1998			JP 10-321258 A	HCAPLUS
Samsung Sdi Co Ltd	2000			JP 12-331711 A	

L97 ANSWER 5 OF 7 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2005:219962 HCAPLUS Full-text

DN 142:282886

TI Nonaqueous solvent secondary battery

IN Takahashi, Kentaro

PA Sanyo Electric Co., Ltd., Japan

SO U.S. Pat. Appl. Publ., 11 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20050053843	A1	20050310	US 2004-936658	20040909 <--
	JP 2005085608	A	20050331	JP 2003-316641	20030909 <--
	TW 238554	B	20050821	TW 2004-93110633	20040416 <--
	CN 1595711	A	20050316	CN 2004-10048573	20040608 <--
PRAI	JP 2003-316641	A	20030909		

AB The invention concerns a nonaq. solvent secondary battery with a high initial charge/discharge capacity and excellent charge/discharge characteristics at

high temperature, having a pos. electrode containing a pos. electrode active material capable of reversibly occluding and releasing lithium, a neg. electrode containing a neg. electrode active material capable of reversibly occluding and releasing lithium and a non-aqueous solvent electrolyte containing (1) acrylic acid anhydride, and (2) an aromatic compound having at least one electron donating group, wherein the electron donating group comprises at least one member selected from any of the alkyl group, alkoxy group, alkylamino group and amine, provided that each of the alkyl group, alkoxy group and alkylamino group includes a halogen substituted group and a cycloaliph. group.

IC ICM H01M0010-40

INCL 429329000; 429303000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Anhydrides

RL: DEV (Device component use); USES (Uses)  
(cyclic; nonaq. solvent secondary battery)

IT Battery electrolytes

Secondary batteries

(nonaq. solvent secondary battery)

IT Aromatic compounds

Carbonaceous materials (technological products)

RL: DEV (Device component use); USES (Uses)

(nonaq. solvent secondary battery)

IT 62-53-3, Aniline, uses 85-42-7, 1,2-Cyclohexane dicarboxylic acid anhydride 85-44-9, Phthalic acid anhydride 98-06-6, tert-Butylbenzene 98-51-1, 4-tert-Butyltoluene 98-82-8, Cumene 100-41-4, Ethylbenzene, uses 100-61-8, n-Methylaniline, uses 100-66-3, Anisole, uses 103-65-1, Propylbenzene 103-69-5, n-Ethylaniline 103-73-1, Ethoxybenzene 104-51-8, Butylbenzene 104-93-8, 4-Methylanisole 108-30-5, Succinic acid anhydride, uses 108-31-6, Maleic acid anhydride, uses 108-32-7, Propylene carbonate 108-55-4, Glutaric acid anhydride 108-67-8, 1,3,5-Trimethylbenzene, uses 108-88-3, Toluene, uses 109-17-1, Tetraethylene glycol dimethacrylate 119-64-2, 1,2,3,4-Tetrahydronaphthalene 121-69-7, n,n-Dimethylaniline, uses 129-64-6, Norbornene-endo-2,3-dicarboxylic acid anhydride 135-98-8, sec-Butylbenzene 452-10-8, 2,4-Difluoroanisole 456-49-5, 3-Fluoroanisole 459-60-9, 4-Fluoroanisole 496-11-7, Indane 535-77-3, 3-Isopropyltoluene 538-68-1, Amylbenzene 538-93-2, Isobutylbenzene 622-85-5, Propoxybenzene 626-25-5, Glycolic acid anhydride 701-30-4 827-52-1, Cyclohexylbenzene 873-49-4, Cyclopropylbenzene 935-79-5, cis-1,2,3,6-Tetrahydrophthalic acid anhydride 1007-26-7, (2,2-Dimethylpropyl)benzene 1131-15-3 2049-95-8, tert-Amylbenzene 2959-96-8 4100-80-5 4437-85-8, Butylene carbonate 17347-61-4 28928-97-4 29316-05-0, sec-Amylbenzene 93343-10-3, 3,5-Difluoroanisole 124221-30-3 847484-87-1

RL: DEV (Device component use); USES (Uses)

(nonaq. solvent secondary battery)

IT 98-06-6, tert-Butylbenzene 98-82-8, Cumene

135-98-8, sec-Butylbenzene 701-30-4

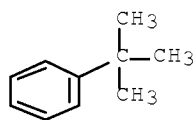
2049-95-8, tert-Amylbenzene

RL: DEV (Device component use); USES (Uses)

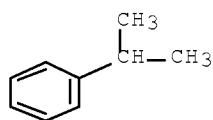
(nonaq. solvent secondary battery)

RN 98-06-6 HCAPLUS

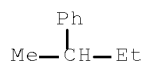
CN Benzene, (1,1-dimethylethyl)- (CA INDEX NAME)



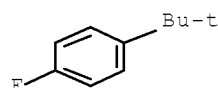
RN 98-82-8 HCAPLUS  
 CN Benzene, (1-methylethyl)- (CA INDEX NAME)



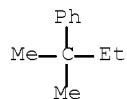
RN 135-98-8 HCAPLUS  
 CN Benzene, (1-methylpropyl)- (CA INDEX NAME)



RN 701-30-4 HCAPLUS  
 CN Benzene, 1-(1,1-dimethylethyl)-4-fluoro- (CA INDEX NAME)



RN 2049-95-8 HCAPLUS  
 CN Benzene, (1,1-dimethylpropyl)- (CA INDEX NAME)



L97 ANSWER 6 OF 7 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 2003:982461 HCAPLUS Full-text  
 DN 140:44701  
 TI Redox mediator as an overcharge protection agent for 4 V class lithium-ion rechargeable cells  
 AU Shima, Kunihiisa; Ue, Makoto; Yamaki, Jun-ichi  
 CS Mitsubishi Chemical Group Science and Technology Research Center, Inc., Ami, Inashiki, Ibaraki, 300-0332, Japan  
 SO Electrochemistry (Tokyo, Japan) (2003), 71(12), 1231-1235  
 CODEN: EECTFA; ISSN: 1344-3542

PB Electrochemical Society of Japan

DT Journal

LA English

AB It is well-known that an aromatic compound such as biphenyl is added into electrolyte solns. to prevent lithium-ion batteries from overcharging, generating hydrogen gas under overcharging conditions. We have examined the oxidative behaviors of one-benzene-ring aromatic compounds including benzene, toluene, ethylbenzene, cumene, tert-butylbenzene, and cyclohexylbenzene under the overcharging conditions. We have found that aromatic compounds without hydrogen atom at the benzylic position such as tert-butylbenzene generated mainly carbon dioxide, whereas those with hydrogen atom at the benzylic position showed polymerization accompanied by hydrogen evolution. It was considered that tert-butylbenzene works as a redox mediator, which mediates the oxidative decomposition of carbonate solvents evolving the carbon dioxide.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Secondary batteries

(aromatic compound redox mediators as overcharge protection agent for 4 V class lithium-ion batteries)

IT 71-43-2, Benzene, uses 98-06-6, tert-Butylbenzene  
98-82-8, Cumene 100-41-4, Ethylbenzene, uses 108-88-3,  
Toluene, uses 827-52-1, Cyclohexylbenzene 1014-60-4,  
1,3-Di-tert-butylbenzene

RL: MOA (Modifier or additive use); USES (Uses)

(aromatic compound redox mediators as overcharge protection agent for 4 V class lithium-ion batteries)

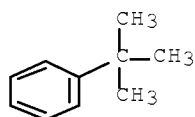
IT 98-06-6, tert-Butylbenzene 98-82-8, Cumene  
1014-60-4, 1,3-Di-tert-butylbenzene

RL: MOA (Modifier or additive use); USES (Uses)

(aromatic compound redox mediators as overcharge protection agent for 4 V class lithium-ion batteries)

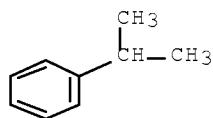
RN 98-06-6 HCAPLUS

CN Benzene, (1,1-dimethylethyl)- (CA INDEX NAME)



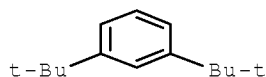
RN 98-82-8 HCAPLUS

CN Benzene, (1-methylethyl)- (CA INDEX NAME)



RN 1014-60-4 HCAPLUS

CN Benzene, 1,3-bis(1,1-dimethylethyl)- (CA INDEX NAME)



## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Adachi, M	1999	146	1256	J Electrochem Soc	HCAPLUS
Frisch, M	1998			Gaussian 98, Revisio	
Kim, H	2002		78	The 43rd Battery Sym	
Lee, D	2002	19	645	Korean J Chem Eng	HCAPLUS
Leising, R	2001	148	A838	J Electrochem Soc	HCAPLUS
Richardson, T	2000	99-25	687	Proc Electrochem Soc	HCAPLUS
Saito, Y	2000	97-98	693	J Power Sources	
Shima, K	2003			Abstract of the 203t	
Tobishima, S	2002	70	875	Electrochemistry	HCAPLUS
Venugopal, G	2001	101	231	J Power Sources	HCAPLUS
von Sacken, U	1998			Abstract of the 9th	
Yan, Y	2000		467	Solid State Ionics:	
Zhang, M	1998			Abstract of the 9th	
OSC.G 8	THERE ARE 8 CAPLUS RECORDS THAT CITE THIS RECORD (8 CITINGS)				

L97 ANSWER 7 OF 7 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 1963:468800 HCAPLUS Full-text

DN 59:68800

OREF 59:12665c-d

TI An electrochemical method of reducing aromatic compounds selectively to dihydro or tetrahydro products

AU Benkeser, Robert A.; Kaiser, Edwin M.

CS Purdue Univ., West Lafayette, IN

SO Journal of the American Chemical Society (1963), 85(18), 2858-9

CODEN: JACSAT; ISSN: 0002-7863

DT Journal

LA Unavailable

OS CASREACT 59:68800

AB In a simple electrolytic cell with an asbestos divider separating anode and cathode, aromatic hydrocarbons were reduced to cycloolefins. Similarly, but without the divider, 1,4-dihydro compds. were obtained. With the cell divided, anhydrous MeNH<sub>2</sub> and LiCl were placed in each compartment, and the hydrocarbon in the cathode. Thus, 12 g. cumene, 17 g. LiCl, and 450 ml. MeNH<sub>2</sub> (in each compartment) treated with 50,000 coulombs gave 75% product, consisting of 89% isopropylcyclohexenes (I) and 11% cumene, while without the divider, the same quantities gave 82% product, consisting of 78% 2,5-dihydroisopropylbenzene, 6% I, 13% cumene, and 3% unidentified diene. Similar results were obtained with C<sub>6</sub>H<sub>6</sub>, PhMe, PhEt, and PhCMe<sub>3</sub>. It was postulated that the actual reducing agent was Li generated at the cathode.

CC 35 (Noncondensed Aromatic Compounds)

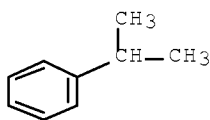
IT 98-82-8, Cumene 100-41-4, Benzene, ethyl-  
(reduction of)

IT 98-06-6, Benzene, tert-butyl-  
(reduction of, electrochem)

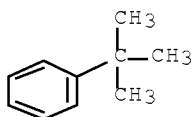
IT 98-82-8, Cumene  
(reduction of)

RN 98-82-8 HCAPLUS

CN Benzene, (1-methylethyl)- (CA INDEX NAME)



IT 98-06-6, Benzene, tert-butyl-  
 (reduction of, electrochem)  
 RN 98-06-6 HCAPLUS  
 CN Benzene, (1,1-dimethylethyl)- (CA INDEX NAME)



OSC.G 7 THERE ARE 7 CAPLUS RECORDS THAT CITE THIS RECORD (7 CITINGS)

=> fil reg  
 FILE 'REGISTRY' ENTERED AT 11:41:23 ON 30 JUL 2009  
 USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
 PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
 COPYRIGHT (C) 2009 American Chemical Society (ACS)

Property values tagged with IC are from the ZIC/VINITI data file  
 provided by InfoChem.

STRUCTURE FILE UPDATES: 28 JUL 2009 HIGHEST RN 1169929-67-2  
 DICTIONARY FILE UPDATES: 28 JUL 2009 HIGHEST RN 1169929-67-2

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH January 9, 2009.

Please note that search-term pricing does apply when  
 conducting SmartSELECT searches.

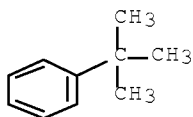
REGISTRY includes numerically searchable data for experimental and  
 predicted properties as well as tags indicating availability of  
 experimental property data in the original document. For information  
 on property searching in REGISTRY, refer to:

<http://www.cas.org/support/stngen/stndoc/properties.html>

=> d ide can l44

L44 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2009 ACS on STN  
 RN 98-06-6 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Benzene, (1,1-dimethylethyl)- (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN Benzene, tert-butyl- (8CI)  
 OTHER NAMES:  
 CN (1,1-Dimethylethyl)benzene

CN 2-Methyl-2-phenylpropane  
 CN Dimethylethylbenzene  
 CN NSC 6557  
 CN Phenyltrimethylmethane  
 CN t-Butylbenzene  
 CN **tert-Butylbenzene**  
 CN Trimethylphenylmethane  
 MF C10 H14  
 CI COM  
 LC STN Files: AGRICOLA, ANABSTR, AQUIRE, BEILSTEIN\*, BIOSIS, CA, CAPLUS, CASREACT, CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CSCHEM, CSNB, DETHERM\*, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, GMELIN\*, HSDB\*, IFICDB, IFIPAT, IFIUDB, MEDLINE, MRCK\*, MSDS-OHS, NAPRALERT, RTECS\*, SPECINFO, SYNTHLINE, TOXCENTER, ULIDAT, USPAT2, USPATFULL, USPATOLD  
 (\*File contains numerically searchable property data)  
 Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)



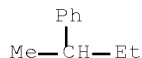
\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

3253 REFERENCES IN FILE CA (1907 TO DATE)  
 17 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 3258 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> d ide 145 tot

L45 ANSWER 1 OF 2 REGISTRY COPYRIGHT 2009 ACS on STN  
 RN 135-98-8 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Benzene, (1-methylpropyl)- (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN Benzene, sec-butyl- (8CI)  
 OTHER NAMES:  
 CN (±)-sec-Butylbenzene  
 CN (α-Methylpropyl)benzene  
 CN (1-Methylpropyl)benzene  
 CN (RS)-2-Phenylbutane  
 CN 2-Phenylbutane  
 CN NSC 8466  
 CN **sec-Butylbenzene**  
 DR 36383-15-0  
 MF C10 H14  
 CI COM  
 LC STN Files: AGRICOLA, ANABSTR, BEILSTEIN\*, BIOSIS, CA, CAPLUS, CASREACT, CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CSCHEM, DETHERM\*, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, GMELIN\*, HSDB\*, IFICDB, IFIPAT,

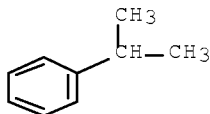
IFIUDB, MEDLINE, MRCK\*, MSDS-OHS, NAPRALERT, RTECS\*, SPECINFO,  
 TOXCENTER, ULIDAT, USPAT2, USPATFULL, USPATOLD  
 (\*File contains numerically searchable property data)  
 Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

1678 REFERENCES IN FILE CA (1907 TO DATE)  
 5 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 1680 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L45 ANSWER 2 OF 2 REGISTRY COPYRIGHT 2009 ACS on STN  
 RN ~~98-82-8~~ REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Benzene, (1-methylethyl)- (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN Cumene (8CI)  
 OTHER NAMES:  
 CN (1-Methylethyl)benzene  
 CN 2-Phenylpropane  
 CN Cumol  
 CN i-Propylbenzene  
 CN **Isopropylbenzene**  
 CN NSC 8776  
 MF C9 H12  
 CI COM  
 LC STN Files: AGRICOLA, ANABSTR, AQUIRE, BEILSTEIN\*, BIOSIS, BIOTECHNO, CA,  
 CAPLUS, CASREACT, CBNB, CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN,  
 CSCHEM, CSNB, DDFU, DETHERM\*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2,  
 ENCOMPPAT, ENCOMPPAT2, GMELIN\*, HSDB\*, IFICDB, IFIPAT, IFIUDB, MEDLINE,  
 MRCK\*, MSDS-OHS, NAPRALERT, PIRA, PROMT, RTECS\*, SPECINFO, SYNTHLINE,  
 TOXCENTER, TULSA, ULIDAT, USPAT2, USPATFULL  
 (\*File contains numerically searchable property data)  
 Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)



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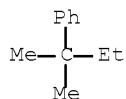
12581 REFERENCES IN FILE CA (1907 TO DATE)  
 112 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA



12607 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=&gt; d ide 146

L46 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2009 ACS on STN  
 RN 2049-95-8 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Benzene, (1,1-dimethylpropyl)- (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN Benzene, tert-pentyl- (6CI, 7CI, 8CI)  
 OTHER NAMES:  
 CN (1,1-Dimethylpropyl)benzene  
 CN 2-Methyl-2-phenylbutane  
 CN Hizol P  
 CN NSC 4025  
 CN tert-Amylbenzene  
 CN **tert-Pentylbenzene**  
 MF C11 H16  
 LC STN Files: ANABSTR, BEILSTEIN\*, CA, CAPLUS, CASREACT, CHEMCATS,  
 CHEMINFORMRX, CHEMLIST, CSCHEM, DETHERM\*, GMELIN\*, IFICDB, IFIPAT,  
 IFIUDB, RTECS\*, SPECINFO, TOXCENTER, USPAT2, USPATFULL, USPATOLD  
 (\*File contains numerically searchable property data)  
 Other Sources: EINECS\*\*, NDSL\*\*, TSCA\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)

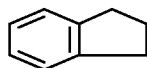


\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

401 REFERENCES IN FILE CA (1907 TO DATE)  
 403 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=&gt; d ide 147 tot

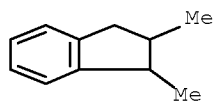
L47 ANSWER 1 OF 6 REGISTRY COPYRIGHT 2009 ACS on STN  
 RN 53563-67-0 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN 1H-Indene, 2,3-dihydrodimethyl- (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN Indan, dimethyl- (7CI)  
 OTHER NAMES:  
 CN **Dimethylindan**  
 CN Dimethylindane  
 MF C11 H14  
 CI IDS, COM  
 LC STN Files: CA, CAPLUS, TOXCENTER, USPATFULL



2 ( D1—Me )

80 REFERENCES IN FILE CA (1907 TO DATE)  
 7 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 80 REFERENCES IN FILE CAPLUS (1907 TO DATE)

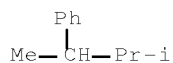
L47 ANSWER 2 OF 6 REGISTRY COPYRIGHT 2009 ACS on STN  
 RN 17057-82-8 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN 1H-Indene, 2,3-dihydro-1,2-dimethyl- (CA INDEX NAME)  
 OTHER NAMES:  
 CN **1,2-Dimethylindan**  
 CN 1,2-Dimethylindane  
 MF C11 H14  
 LC STN Files: BEILSTEIN\*, CA, CAPLUS, CASREACT, CHEMINFORMRX, DETHERM\*,  
 SPECINFO, TOXCENTER, USPAT2, USPATFULL  
 (\*File contains numerically searchable property data)



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

29 REFERENCES IN FILE CA (1907 TO DATE)  
 29 REFERENCES IN FILE CAPLUS (1907 TO DATE)

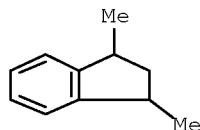
L47 ANSWER 3 OF 6 REGISTRY COPYRIGHT 2009 ACS on STN  
 RN 4481-30-5 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Benzene, (1,2-dimethylpropyl)- (CA INDEX NAME)  
 OTHER NAMES:  
 CN **(1,2-Dimethylpropyl)benzene**  
 CN 2-Methyl-3-phenylbutane  
 CN 2-Phenyl-3-methylbutane  
 CN 3-Methyl-2-phenylbutane  
 CN Butane, 2-methyl-3-phenyl-  
 CN NSC 112995  
 MF C11 H16  
 LC STN Files: BEILSTEIN\*, CA, CAPLUS, CASREACT, CHEMCATS, CHEMLIST, CSCHEM,  
 DETHERM\*, IFICDB, IFIPAT, IFIUDB, SPECINFO, TOXCENTER, USPATFULL,  
 USPATOLD  
 (\*File contains numerically searchable property data)



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

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93 REFERENCES IN FILE CAPLUS (1907 TO DATE)

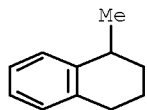
L47 ANSWER 4 OF 6 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 4175-53-5 REGISTRY  
ED Entered STN: 16 Nov 1984  
CN 1H-Indene, 2,3-dihydro-1,3-dimethyl- (CA INDEX NAME)  
OTHER CA INDEX NAMES:  
CN Indan, 1,3-dimethyl- (6CI, 7CI, 8CI)  
OTHER NAMES:  
CN **1,3-Dimethylindan**  
CN NSC 5241  
MF C11 H14  
LC STN Files: BEILSTEIN\*, CA, CAPLUS, CASREACT, CHEMINFORMRX, DETHERM\*,  
GMELIN\*, IFICDB, IFIPAT, IFIUDB, SPECINFO, TOXCENTER, USPATFULL,  
USPATOLD  
(\*File contains numerically searchable property data)



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

30 REFERENCES IN FILE CA (1907 TO DATE)  
2 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
30 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L47 ANSWER 5 OF 6 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 1559-81-5 REGISTRY  
ED Entered STN: 16 Nov 1984  
CN Naphthalene, 1,2,3,4-tetrahydro-1-methyl- (CA INDEX NAME)  
OTHER NAMES:  
CN (RS)-1-Methyltetralin  
CN  $\alpha$ -Methyltetralin  
CN 1,2,3,4-Tetrahydro-1-methylnaphthalene  
CN **1-Methyl-1,2,3,4-tetrahydronaphthalene**  
CN 1-Methyltetralin  
MF C11 H14  
CI COM  
LC STN Files: BEILSTEIN\*, CA, CAPLUS, CASREACT, CHEMCATS, CHEMINFORMRX,  
DETERM\*, IFICDB, IFIPAT, IFIUDB, NAPRALERT, SPECINFO, TOXCENTER,  
USPATFULL, USPATOLD  
(\*File contains numerically searchable property data)



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

156 REFERENCES IN FILE CA (1907 TO DATE)  
 1 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 156 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L47 ANSWER 6 OF 6 REGISTRY COPYRIGHT 2009 ACS on STN

RN 98-82-8 REGISTRY

ED Entered STN: 16 Nov 1984

CN Benzene, (1-methylethyl)- (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN Cumene (8CI)

OTHER NAMES:

CN (1-Methylethyl)benzene

CN 2-Phenylpropane

CN Cumol

CN i-Propylbenzene

CN **Isopropylbenzene**

CN NSC 8776

MF C9 H12

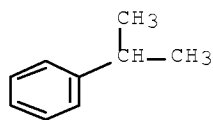
CI COM

LC STN Files: AGRICOLA, ANABSTR, AQUIRE, BEILSTEIN\*, BIOSIS, BIOTECHNO, CA, CAPLUS, CASREACT, CBNB, CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB, DDFU, DETHERM\*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, GMELIN\*, HSDB\*, IFICDB, IFIPAT, IFIUDB, MEDLINE, MRCK\*, MSDS-OHS, NAPRALERT, PIRA, PROMT, RTECS\*, SPECINFO, SYNTHLINE, TOXCENTER, TULSA, ULIDAT, USPAT2, USPATFULL

(\*File contains numerically searchable property data)

Other Sources: DSL\*\*, EINECS\*\*, TSCA\*\*

(\*\*Enter CHEMLIST File for up-to-date regulatory information)

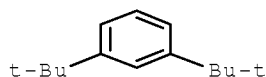


\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

12581 REFERENCES IN FILE CA (1907 TO DATE)  
 112 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 12607 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> d ide 148

L48 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2009 ACS on STN  
 RN 1014-60-4 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Benzene, 1,3-bis(1,1-dimethylethyl)- (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN Benzene, m-di-tert-butyl- (7CI, 8CI)  
 OTHER NAMES:  
 CN 1,3-Bis(1,1-dimethylethyl)benzene  
 CN **1,3-Di-tert-butylbenzene**  
 CN 4,6-Di(tert-butyl)benzene  
 CN m-Di-tert-butylbenzene  
 CN NSC 243654  
 MF C14 H22  
 LC STN Files: AGRICOLA, ANABSTR, BEILSTEIN\*, BIOSIS, CA, CAPLUS, CASREACT,  
 CHEMCATS, CHEMINFORMRX, CSCHEM, DETHERM\*, GMELIN\*, SPECINFO, TOXCENTER,  
 USPAT2, USPATFULL, USPATOLD  
 (\*File contains numerically searchable property data)

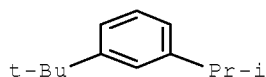


\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

156 REFERENCES IN FILE CA (1907 TO DATE)  
 4 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 160 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> d ide 149

L49 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2009 ACS on STN  
 RN 20033-12-9 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN **Benzene, 1-(1,1-dimethylethyl)-3-(1-methylethyl)-** (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN Cumene, m-tert-butyl- (7CI, 8CI)  
 OTHER NAMES:  
 CN m-tert-Butylcumene  
 MF C13 H20  
 LC STN Files: ANABSTR, BEILSTEIN\*, CA, CAPLUS, CASREACT, SPECINFO, USPATOLD  
 (\*File contains numerically searchable property data)



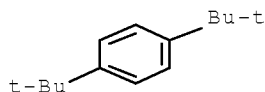
\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

16 REFERENCES IN FILE CA (1907 TO DATE)

## 16 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=&gt; d ide 150

L50 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2009 ACS on STN  
 RN 1012-72-2 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Benzene, 1,4-bis(1,1-dimethylethyl)- (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN Benzene, p-di-tert-butyl- (7CI, 8CI)  
 OTHER NAMES:  
 CN 1,4-Bis(1,1-dimethylethyl)benzene  
 CN **1,4-Di-tert-butylbenzene**  
 CN NSC 6342  
 CN p-Bis(tert-butyl)benzene  
 CN p-Di-tert-butylbenzene  
 MF C14 H22  
 CI COM  
 LC STN Files: BEILSTEIN\*, CA, CAPLUS, CASREACT, CHEMCATS, CHEMINFORMRX,  
 CHEMLIST, CSCHEM, DETHERM\*, GMELIN\*, IFICDB, IFIPAT, IFIUDB, MEDLINE,  
 PIRA, RTECS\*, SPECINFO, TOXCENTER, USPATFULL, USPATOLD  
 (\*File contains numerically searchable property data)  
 Other Sources: EINECS\*\*, NDSL\*\*, TSCA\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)



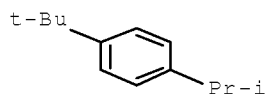
\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

348 REFERENCES IN FILE CA (1907 TO DATE)  
 9 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 348 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=&gt; d ide 151

L51 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2009 ACS on STN  
 RN 4132-49-4 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Benzene, 1-(1,1-dimethylethyl)-4-(1-methylethyl)- (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN Cumene, p-tert-butyl- (6CI, 7CI, 8CI)  
 OTHER NAMES:  
 CN 1-tert-Butyl-4-(1-methylethyl)benzene  
 CN **1-tert-Butyl-4-isopropylbenzene**  
 CN 4-Isopropyl-tert-butylbenzene  
 CN 4-tert-Butylisopropylbenzene  
 CN p-tert-Butylcumene  
 CN p-tert-Butylisopropylbenzene  
 MF C13 H20  
 CI COM  
 LC STN Files: BEILSTEIN\*, CA, CAPLUS, CASREACT, TOXCENTER, USPATFULL,  
 USPATOLD

(\*File contains numerically searchable property data)

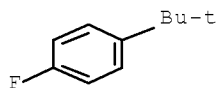


\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

64 REFERENCES IN FILE CA (1907 TO DATE)  
64 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> d ide 152

L52 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 701-30-4 REGISTRY  
ED Entered STN: 16 Nov 1984  
CN Benzene, 1-(1,1-dimethylethyl)-4-fluoro- (CA INDEX NAME)  
OTHER CA INDEX NAMES:  
CN Benzene, 1-tert-butyl-4-fluoro- (7CI, 8CI)  
OTHER NAMES:  
CN 1-Fluoro-4-tert-butylbenzene  
CN **1-tert-Butyl-4-fluorobenzene**  
MF C10 H13 F  
LC STN Files: BEILSTEIN\*, CA, CAPLUS, CASREACT, CHEMINFORMRX, IFICDB,  
IFIPAT, IFIUDB, SPECINFO, TOXCENTER, USPAT2, USPATFULL  
(\*File contains numerically searchable property data)



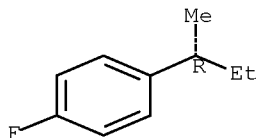
\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

36 REFERENCES IN FILE CA (1907 TO DATE)  
37 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> d ide 153 tot

L53 ANSWER 1 OF 3 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 326879-17-8 REGISTRY  
ED Entered STN: 13 Mar 2001  
CN **Benzene, 1-fluoro-4-[(1R)-1-methylpropyl]-** (CA INDEX NAME)  
FS STEREOSEARCH  
MF C10 H13 F  
SR CA  
LC STN Files: CA, CAPLUS, CASREACT, CHEMCATS

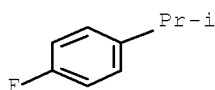
Absolute stereochemistry. Rotation (-).



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

3 REFERENCES IN FILE CA (1907 TO DATE)  
 1 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 3 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L53 ANSWER 2 OF 3 REGISTRY COPYRIGHT 2009 ACS on STN  
 RN 403-39-4 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Benzene, 1-fluoro-4-(1-methylethyl)- (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN Cumene, p-fluoro- (6CI, 7CI, 8CI)  
 OTHER NAMES:  
 CN 1-Fluoro-4-isopropylbenzene  
 CN **4-Fluoro-1-isopropylbenzene**  
 CN 4-Fluorocumene  
 CN NSC 79875  
 CN p-Fluorocumene  
 CN p-Isopropylfluorobenzene  
 MF C9 H11 F  
 LC STN Files: BEILSTEIN\*, CA, CAPLUS, CASREACT, CHEMCATS, CHEMINFORMRX,  
 CHEMLIST, CSCHEM, IFICDB, IFIPAT, IFIUDB, SPECINFO, TOXCENTER, USPAT2,  
 USPATFULL, USPATOLD  
 (\*File contains numerically searchable property data)  
 Other Sources: EINECS\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)

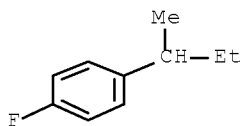


\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

45 REFERENCES IN FILE CA (1907 TO DATE)  
 45 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L53 ANSWER 3 OF 3 REGISTRY COPYRIGHT 2009 ACS on STN  
 RN 329-76-0 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Benzene, 1-fluoro-4-(1-methylpropyl)- (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN **Benzene, 1-sec-butyl-4-fluoro-** (6CI, 8CI)  
 MF C10 H13 F  
 LC STN Files: CA, CAPLUS, CASREACT



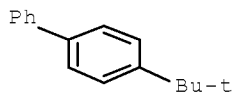


\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

5 REFERENCES IN FILE CA (1907 TO DATE)  
7 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> d ide 154

L54 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 1625-92-9 REGISTRY  
ED Entered STN: 16 Nov 1984  
CN 1,1'-Biphenyl, 4-(1,1-dimethylethyl)- (CA INDEX NAME)  
OTHER CA INDEX NAMES:  
CN Biphenyl, 4-tert-butyl- (6CI, 7CI, 8CI)  
OTHER NAMES:  
CN 4-(1,1-Dimethylethyl)-1,1'-biphenyl  
CN 4-tert-Butyl-1,1'-biphenyl  
CN ~~4-tert-Butylbiphenyl~~  
CN p-tert-Butylbiphenyl  
CN p-tert-Butyldiphenyl  
MF C16 H18  
CI COM  
LC STN Files: BEILSTEIN\*, CA, CAPLUS, CASREACT, CHEMCATS, CSCHEM, IFICDB,  
IFIPAT, IFIUDB, SPECINFO, TOXCENTER, USPAT2, USPATFULL, USPATOLD  
(\*File contains numerically searchable property data)



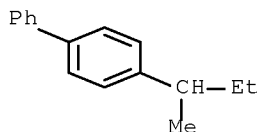
\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

110 REFERENCES IN FILE CA (1907 TO DATE)  
110 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> d ide 155

L55 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 16236-40-1 REGISTRY  
ED Entered STN: 16 Nov 1984  
CN 1,1'-Biphenyl, 4-(1-methylpropyl)- (CA INDEX NAME)  
OTHER CA INDEX NAMES:  
CN Biphenyl, 4-sec-butyl- (6CI, 7CI, 8CI)  
OTHER NAMES:  
CN ~~4-sec-Butylbiphenyl~~  
MF C16 H18

LC STN Files: BEILSTEIN\*, CA, CAPLUS, CASREACT, CHEMLIST, IFICDB, IFIPAT,  
 IFIUDB, USPATFULL, USPATOLD  
 (\*File contains numerically searchable property data)

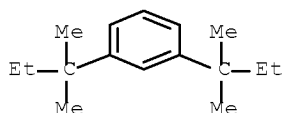


\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

12 REFERENCES IN FILE CA (1907 TO DATE)  
 12 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> d ide 156

L56 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2009 ACS on STN  
 RN 3370-27-2 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Benzene, 1,3-bis(1,1-dimethylpropyl)- (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN ~~Benzene, m-di-tert-pentyl-~~ (7CI, 8CI)  
 MF C16 H26  
 LC STN Files: CA, CAPLUS, CHEMCATS, CHEMLIST  
 Other Sources: EINECS\*\*, NDSL\*\*, TSCA\*\*  
 (\*\*Enter CHEMLIST File for up-to-date regulatory information)

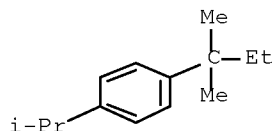


\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

1 REFERENCES IN FILE CA (1907 TO DATE)  
 1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> d ide 157

L57 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2009 ACS on STN  
 RN 125340-91-2 REGISTRY  
 ED Entered STN: 09 Feb 1990  
 CN Benzene, 1-(1,1-dimethylpropyl)-4-(1-methylethyl)- (CA INDEX NAME)  
 MF C14 H22  
 SR CA  
 LC STN Files: BEILSTEIN\*, CA, CAPLUS, USPATFULL  
 (\*File contains numerically searchable property data)

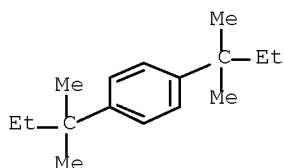


\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

4 REFERENCES IN FILE CA (1907 TO DATE)  
4 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> d ide l58

L58 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 3373-10-2 REGISTRY  
ED Entered STN: 16 Nov 1984  
CN Benzene, 1,4-bis(1,1-dimethylpropyl)- (CA INDEX NAME)  
OTHER CA INDEX NAMES:  
CN Benzene, p-di-tert-pentyl- (7CI, 8CI)  
OTHER NAMES:  
CN **1,4-Di-tert-pentylbenzene**  
MF C16 H26  
LC STN Files: BEILSTEIN\*, CA, CAPLUS, CHEMCATS, CHEMLIST, CSCHEM, SPECINFO, TOXCENTER  
(\*File contains numerically searchable property data)  
Other Sources: EINECS\*\*, NDSL\*\*, TSCA\*\*  
(\*\*Enter CHEMLIST File for up-to-date regulatory information)



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

11 REFERENCES IN FILE CA (1907 TO DATE)  
11 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> d his

(FILE 'HOME' ENTERED AT 09:47:46 ON 30 JUL 2009)  
SET COST OFF

FILE 'HCAPLUS' ENTERED AT 09:47:57 ON 30 JUL 2009

L1 1 S US20080248399/PN OR (US2006-593231# OR WO2005-JP5022 OR JP200  
E ABE/AU  
L2 3 S E3

L3           1858 E ABE K/AU  
               S E3-E6  
               E ABE KO/AU  
               E ABE KO/AU  
 L4           94 S E3,E4,E9,E10  
               E ABE NAME/AU  
 L5           111 S E4  
               E KOJI/AU  
 L6           3 S E3,E4  
 L7           1 S E88  
               E KO JI/AU  
               E USHIGOE/AU  
 L8           23 S E14  
               E YOSHIHIRO/AU  
 L9           1 S E3  
               E YOSHIHIRO NAME/AU  
               E YOSHIHIRO U/AU  
               E ITO/AU  
 L10          911 S E3,E4,E5,E10  
               E ITO NAME/AU  
 L11          167 S E4  
               E AKIKAZU/AU  
 L12          1 S E3  
               E UBE/CO  
 L13          18544 S E3-E120/CO,PA,CS  
 L14          1117 S E121-E201/CO,PA,CS  
               E E66+ALL  
 L15          11228 S E2+RT OR E2-E33/PA,CS  
               E ABE KOJI/AU  
 L16          702 S E3  
               E ITO AKIKAZU/AU  
 L17          20 S E3  
 L18          1 S L1 AND L2-L17  
               SEL RN

FILE 'REGISTRY' ENTERED AT 10:41:07 ON 30 JUL 2009

L19          15 S E1-E15  
 L20          8 S L19 AND NR>=1 NOT OCOC2/ES  
 L21          7 S L19 NOT L20  
               E BENZENE, 1,1-DIMETHYLETHYL-3-METHYLETHYL-/CN  
               E BENZENE, 3-METHYLETHYL-1,1-DIMETHYLETHYL-/CN  
               E 1-TERT-BUTYL-3-ISOPROPYLBENZENE/CN  
               E 1-TERT-BUTYL-3-ISOPROPYL-BENZENE/CN  
               E BENZENE, 1-(1,1-DIMETHYLETHYL)-3-(1-METHYLETHYL)-/CN  
 L22          1 S E3  
               E BENZENE, 1-(1,1-DIMETHYLETHYL)-4-(1-METHYLETHYL)-/CN  
 L23          1 S E3  
               E 1,4-DI-TERT-BUTYLBENZENE/CN  
 L24          1 S E3  
               E 1-TERT-BUTYL-4-ISOPROPYLBENZENE/CN  
               E 4-FLUORO-TERT-BUTYLBENZENE/CN  
               E TERT-BUTYLBENZENE, 4-FLUORO-/CN  
               E BENZENE, 1-(1,1-DIMETHYLETHYL)-4-FLUORO-/CN  
 L25          1 S E3  
               E 4-FLUORO-ISOPROPYLBENZENE/CN  
               E 4-FLUORO-ISOPROPYL BENZENE/CN  
               E ISOPROPYLBENZENE, 4-FLUORO-/CN  
               E ISOPROPYLBENZENE, 4/CN  
               E ISOPROPYLBENZENE/CN  
               E BENZENE, (1-METHYLETHYL)-4-FLUORO-/CN

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      E BENZENE, (1-METHYLETHYL)FLUORO-/CN
      E C9H11F/MF
L26      39 S E3 AND C6/ES
L27      9 S L26 AND METHYLETHYL
L28      2 S L27 AND 4
L29      1 S L28 NOT D/ELS
      E SEC-BUTYLBENZENE/CN
L30      1 S E3
      E C10H13F/MF
L31      4 S E3 AND C6/ES AND METHYLPROPYL AND 4
L32      2 S 329-76-0 OR 326879-17-8
      E 4-TERT-BUTYLBIPHENYL/CN
L33      1 S E3
      E 4-SEC-BUTYLBIPHENYL/CN
L34      1 S E3
      E 1,3-DI-TERT-PENTYLBENZENE/CN
      E C16H26/MF
L35      187 S E3 AND 46.150.18/RID AND 1/NR
L36      79 S L35 AND 4
L37      12 S L36 AND BIS
L38      11 S L37 NOT D/ELS
      E 1,3-DI-TERT-PENTYLBENZENE/CN
L39      14 S L35 AND 3 AND BIS NOT D/ELS
L40      1 S L39 AND "BENZENE, 1,3-BIS(1,1-DIMETHYLPROPYL)-"/CN
      E 1-TERT-PENTYL-3-ISOPROPYLBENZENE/CN
      E C14H22/MF
L41      124 S E3 AND 46.150.18/RID AND 1/NR AND 4
L42      39 S L41 AND METHYLETHYL
      E "BENZENE, 1-(1,1-DIMETHYLPROPYL)-4-(1-METHYLETHYL)-"/CN
L43      1 S E3
L44      1 S 98-06-6
L45      2 S 135-98-8 OR 98-82-8
L46      1 S 2049-95-8
L47      6 S 53563-67-0 OR 17057-82-8 OR 4175-53-5 OR 4481-30-5 OR 1559-81
L48      1 S 1014-60-4
L49      1 S 20033-12-9
L50      1 S 1012-72-2
L51      1 S 4132-49-4
L52      1 S 701-30-4
L53      3 S 326879-17-8 OR 403-39-4 OR 329-76-0
L54      1 S 1625-92-9
L55      1 S 16236-40-1
L56      1 S 3370-27-2
L57      1 S 125340-91-2
L58      1 S 3373-10-2
L59      0 S 98-06-6/CRN AND (135-98-8 OR 98-82-8)/CRN
L60      0 S 2049-95-8/CRN AND (53563-67-0 OR 17057-82-8 OR 4175-53-5 OR 4
L61      0 S 1014-60-4/CRN AND 20033-12-9/CRN
L62      0 S 1012-72-2/CRN AND 4132-49-4/CRN
L63      0 S 701-30-4/CRN AND (326879-17-8 OR 403-39-4 OR 329-76-0)/CRN
L64      0 S 1625-92-9/CRN AND 16236-40-1/CRN
L65      0 S 3370-27-2/CRN AND 125340-91-2/CRN
L66      0 S 3373-10-2/CRN AND 125340-91-2/CRN

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FILE 'HCAPLUS' ENTERED AT 11:31:07 ON 30 JUL 2009

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L67      1671 S L44 AND L45
L68      175 S L46 AND L47
L69      6 S L48 AND L49
L70      15 S L50 AND L51
L71      3 S L52 AND L53

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L72      3 S L54 AND L55
L73      0 S L56 AND L57
L74      0 S L58 AND L57
L75     1768 S L67-L74
L76      1 S L18 AND L75
L77      6 S L75 AND H01M/IPC, IC, ICM, ICS, EPC
          E BATTERY ELECTROLYT/CT
          E E4+ALL
L78     11167 S E5+OLD, NT
L79      5713 S E6+OLD, NT
L80     87410 S E7+OLD, NT OR E8+OLD, NT
L81     48284 S E4
          E E4+ALL
L82      7124 S E12+OLD, NT
L83     25390 S E14+OLD
L84     11913 S E23+OLD, NT OR E24+OLD, NT
L85      6 S L75 AND L78-L84
L86      7 S L76, L77, L85
          E BATTERY/CT
L87     68523 S E4+OLD, NT OR E5+OLD, NT OR E6+OLD, NT OR E7+OLD, NT
          E E8+ALL
L88     11790 S E2+OLD, NT OR E3+OLD, NT OR E4+OLD, NT
          E BATTERIES/CT
          E E3+ALL
L89     160093 S E1 OR E2+OLD, NT OR E3+OLD, NT OR E4+OLD, NT OR E5+OLD, NT
L90      7 S L75 AND L87-L89
L91      7 S L86, L90
L92      6 S L75 AND BATTERY
L93      3 S L75 AND (FUEL OR VOLT? OR GALVAN? OR ELECTR?) (2W) CELL
L94      1 S L75 AND (RECHARG? OR PRIMARY OR SECONDARY) (S) CELL
L95      9 S L91-L94
L96      7 S L95 NOT (145:505221 OR 134:46039) /DN
L97      7 S L96 AND L44-L58

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FILE 'HCAPLUS' ENTERED AT 11:41:06 ON 30 JUL 2009

FILE 'REGISTRY' ENTERED AT 11:41:23 ON 30 JUL 2009

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